

~~XXXXXXXXXX~~
SEQUENCE LISTING

<110> Rosenberg, Eugene
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<130> 2290.00076

<140> 09/~~20070800~~ 710,262

<141> 1999-01-29

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<170> PatentIn Ver. 2.1

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Val	Ser	Asp	Ser	Ala	Leu	Val	Ala	Thr	Leu	Arg	Ala	Ser	Ala	Lys	Val
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Pro	Phe	Asp	Leu	Ala	Cys	Gly	Pro	Leu	Ala	Arg	Leu	His	Leu	Tyr	Ser
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Arg	Ser	Glu	His	Glu	His	Val	Leu	Leu	Leu	Cys	Phe	His	His	Leu	Val
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Leu	Asp	Gly	Ala	Ser	Val	Ala	Pro	Leu	Leu	Asp	Ala	Leu	Arg	Glu	Arg
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Tyr	Ala	Gly	Thr	Glu	Ala	Lys	Ala	Gly	Leu	Leu	Glu	Val	Pro	Ile	Val
		115					120					125			

~~SECRET~~

Ala Pro Tyr Arg Ala Ala Val Glu Trp Glu Gln Leu Ala Ile Gly Gly
130 135 140

Asp Glu Gly Arg Arg His Leu Asp Tyr Trp Arg His Val Leu Ala Thr
145 150 155 160

Pro Val Pro Pro Pro Leu Asn Leu Pro Thr Asp Arg Pro Arg Ser Ala
165 170 175

Thr Gly Leu Asp Ser Glu Gly Ala Thr His Ser Gln Arg Val Pro Thr
180 185 190

Glu Gln Ala Leu Arg Leu Arg Glu Phe Ala Arg Ala Gln Gln Val Ser
195 200 205

Leu Pro Thr Val Leu Leu Gly Leu Tyr Tyr Ala Leu Leu His Arg His
210 215 220

Thr Arg Gln Asp Asp Val Val Val Gly Ile Pro Thr Met Gly Arg Pro
225 230 235 240

Arg Ala Glu Leu Ala Thr Ala Ile Gly Tyr Phe Val Asn Val Met Ala
245 250 255

Val Arg Ala Arg Gly Leu Gly Gln His Ser Phe Gly Ser Leu Leu Arg
260 265 270

His Leu His Asp Ser Val Ile Asp Gly Leu Glu His Ala His Tyr Pro
275 280 285

Phe Pro Arg Val Val Lys Asp Leu Arg Leu Ser Asn Gly Pro Glu Glu
290 295 300

Ala Pro Gly Phe Gln Thr Met Phe Thr Phe Gln Ser Leu Gln Leu Thr
305 310 315 320

Ser Ala Pro Pro Arg Pro Glu Pro Arg Ser Gly Gly Leu Pro Glu Leu
325 330 335

Glu Pro Leu Asp Cys Val His Gln Glu Gly Ala Tyr Pro Leu Glu Leu
340 345 350

Glu Val Val Glu Gly Ala Lys Gly Leu Thr Leu His Phe Lys Tyr Asp
355 360 365

Ala Arg Leu Tyr Glu Ala Asp Thr Val Glu Arg Met Ala Arg Gln Leu
370 375 380

~~Residues~~

Leu	Arg	Ala	Ala	Asp	Gln	Val	Ala	Asp	Gly	Val	Glu	Ser	Pro	Leu	Ser	
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Ala	Leu	Ser	Trp	Leu	Asp	Asp	Glu	Glu	Arg	Arg	Thr	Leu	Leu	Arg	Asp	
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Trp	Asn	Ala	Thr	Ala	Thr	Pro	Phe	Leu	Glu	Asp	Leu	Gly	Val	His	Glu	
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Leu	Phe	Gln	Arg	Gln	Ala	Arg	Glu	Thr	Pro	Asp	Ala	Met	Ala	Val	Ser	
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Tyr	Glu	Gly	His	Ser	Leu	Ser	Tyr	Gln	Ala	Leu	Asp	Thr	Arg	Ser	Arg	
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Glu	Ile	Ala	Ala	His	Leu	Lys	Ser	Phe	Gly	Val	Lys	Pro	Gly	Ala	Leu	
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Val	Gly	Ile	Tyr	Leu	Asp	Arg	Ser	Ala	Glu	Leu	Val	Ala	Ala	Met	Leu	
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Gly	Val	Leu	Ser	Ala	Gly	Ala	Ala	Tyr	Val	Pro	Leu	Asp	Pro	Val	His	
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Pro	Glu	Asp	Arg	Leu	Arg	Tyr	Met	Leu	Glu	Asp	Ser	Gly	Val	Val	Val	
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Val	Leu	Ala	Arg	Gln	Ala	Ser	Arg	Asp	Lys	Val	Ala	Ala	Ile	Ala	Gly	
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Ala	Ser	Cys	Lys	Val	Cys	Val	Leu	Glu	Asp	Val	Lys	Ala	Gly	Ala	Thr	
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Ala	Leu	Glu	Leu	Leu	Leu	Pro	Leu	Cys	Ala	Gly	Ala	Gln	Val	Ile	Ile	
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~~Residue~~

Ala	Ser	Ala	Glu	Thr	Val	Arg	Asp	Ala	Gln	Ala	Leu	Lys	Arg	Ala	Leu	
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Cys	Gly	Gly	Glu	Ala	Leu	Pro	Glu	Ser	Leu	Lys	Ala	His	Phe	Val	Arg	
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Asp	His	Gln	Val	Lys	Val	Arg	Gly	Phe	Arg	Ile	Glu	Met	Gly	Glu	Ile	
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Glu	Ala	Gln	Leu	Ala	Gly	His	Pro	Ser	Val	Lys	Asn	Cys	Ala	Val	Val	
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Phe	Leu	Pro	Asp	Tyr	Met	Val	Pro	Ala	His	Val	Phe	Ala	Val	Asp	Ala	
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Ile Pro Leu Ser Gly Asn Gly Lys Val Asp Arg Gly Gln Leu Met Ala
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Arg Pro Val Val Thr Arg Arg Lys Thr Ser Ala Val His Ala Arg Ser
915 920 925

Pro Val Glu Ala Thr Leu Val Glu Leu Trp Lys Asn Val Leu Gln Val
930 935 940

Asn Glu Val Gly Val Glu Asp Arg Phe Phe Glu Val Gly Gly Asp Ser
945 950 955 960

Val Leu Ala Ala Val Leu Val Glu Glu Met Asn Arg Arg Phe Asp Thr
965 970 975

Arg Leu Ala Val Thr Asp Leu Phe Lys Tyr Val Asn Ile Arg Asp Met
980 985 990

Ala Arg His Met Glu Gly Ala Thr Ala Gln Ala Arg Thr Gly Ala Thr
995 1000 1005

Glu Pro Ala Arg Glu Asp Thr Ala Ser Glu Arg Asp Tyr Glu Gly Ser
1010 1015 1020

Leu Ala Val Ile Gly Ile Ser Cys Gln Leu Pro Gly Ala Ala Asp Pro
1025 1030 1035 1040

Trp Arg Phe Trp Lys Asn Leu Arg Glu Gly Arg Asp Ser Val Val Ala
1045 1050 1055

Tyr Arg His Glu Glu Leu Arg Glu Leu Gly Val Pro Glu Glu Val Leu
1060 1065 1070

Arg Asp Ser Arg Tyr Val Ala Val Arg Ser Ser Ile Glu Asp Lys Glu
1075 1080 1085

Cys Phe Asp Pro His Phe Phe Gly Leu Thr Ala Arg Asp Ala Ser Phe
1090 1095 1100

Met Asp Pro Gln Phe Arg Leu Leu Leu Met His Ala Trp Lys Ala Val
1105 1110 1115 1120

Glu Asp Ala Ala Thr Thr Pro Glu Arg Leu Gly Pro Cys Gly Val Phe
1125 1130 1135

Met Thr Ala Ser Asn Ser Phe Tyr His Gln Gly Ser Pro Gln Phe Pro
1140 1145 1150

~~Peptides~~

Ala Asp Gly Gln Pro Val Leu Arg Thr Ala Glu Glu Tyr Val Leu Trp
1155 1160 1165

Val Leu Ala Gln Ala Gly Ser Ile Pro Thr Met Val Ser Tyr Lys Leu
1170 1175 1180

Gly Leu Lys Gly Pro Ser Leu Phe Val His Thr Asn Cys Ser Ser Ser
1185 1190 1195 1200

Leu Ser Ala Leu Tyr Val Ala Gln Gln Ala Ile Ala Ala Gly Asp Cys
1205 1210 1215

Gln Thr Ala Leu Val Gly Ala Ala Thr Val Phe Pro Ser Ala Asn Leu
1220 1225 1230

Gly Tyr Leu His Gln Arg Gly Leu Asn Phe Ser Ser Ala Gly Arg Val
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Lys Ala Phe Asp Ala Ala Ala Asp Gly Met Ile Ala Gly Glu Gly Val
1250 1255 1260

Ala Val Leu Val Val Lys Asp Ala Ala Ala Val Arg Asp Gly Asp
1265 1270 1275 1280

Pro Ile Tyr Cys Leu Val Arg Lys Val Gly Ile Asn Asn Asp Gly Gln
1285 1290 1295

Asp Lys Val Gly Leu Tyr Ala Pro Ser Ala Thr Gly Gln Ala Glu Val
1300 1305 1310

Ile Arg Arg Leu Phe Asp Arg Thr Gly Ile Asp Pro Ala Ser Ile Gly
1315 1320 1325

Tyr Val Glu Ala His Gly Thr Gly Thr Leu Leu Gly Asp Pro Val Glu
1330 1335 1340

Val Ser Ala Leu Ser Glu Ala Phe Arg Thr Phe Thr Asp Arg Arg Gly
1345 1350 1355 1360

Tyr Cys Arg Leu Gly Ser Val Lys Ser Asn Leu Gly His Leu Asp Thr
1365 1370 1375

Val Ala Gly Leu Ala Gly Leu Ile Lys Thr Ala Leu Ser Leu Arg Gln
1380 1385 1390

Gly Glu Val Pro Pro Thr Leu His Val Thr Gln Val Asn Pro Lys Leu
1395 1400 1405

~~Revised~~

Glu Leu Thr Asp Ser Pro Phe Val Ile Ala Asp Arg Leu Ala Pro Trp
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Pro Ser Leu Pro Gly Pro Arg Arg Ala Ala Val Ser Ala Phe Gly Leu
1425 1430 1435 1440

Gly Gly Thr Asn Thr His Ala Ile Leu Glu His Tyr Pro Arg Asp Ser
1445 1450 1455

Arg Pro Arg Glu Arg Ser Gln Arg Ser Asn Ala Val Arg Ala Val Ala
1460 1465 1470

Pro Phe Ser Ala Arg Thr Leu Glu Ala Leu Lys Asp Asn Leu Arg Ala
1475 1480 1485

Leu Leu Asp Phe Leu Glu Asp Pro Ala Ser Ala Glu Val Ala Leu Ala
1490 1495 1500

Asp Ile Thr Tyr Thr Leu Gln Val Gly Arg Val Ala Met Pro Glu Arg
1505 1510 1515 1520

Met Val Val Thr Ala Ser Thr Arg Asp Glu Leu Val Glu Gly Leu Arg
1525 1530 1535

Arg Gly Ile Ala Thr Val Gly Gly Ala His Val Gly Thr Val Val Asp
1540 1545 1550

Thr Ser Pro Ser Val Asp Ala Asp Ala Arg Ala Val Ala Glu Ala Trp
1555 1560 1565

Ala Thr Gly Asp Ser Ile Asp Trp Asp Ser Leu His Gly Asp Val Lys
1570 1575 1580

Pro Ala Arg Val Ser Leu Pro Thr Tyr Gln Phe Ala Lys Glu Arg Tyr
1585 1590 1595 1600

Gly Leu Ser Pro Ala His Ser Val Ala Asn Ser Ser Lys Thr His Pro
1605 1610 1615

Asp Ala Gly Val Pro Leu Phe Val Pro Thr Trp Gln Pro Trp Ser Glu
1620 1625 1630

Gly Ala Ser Asn Ala Ser Leu Ala Leu Arg His Leu Val Val Leu Cys
1635 1640 1645

Glu Pro Leu Asp Ala Leu Gly Ala Glu Gly Ala Ser Ala Leu Ala Ser
1650 1655 1660

~~Residue~~

Thr Leu Ala Asp Arg Arg Ile Glu Val Val Arg Thr Ser Ser Pro Ser
1665 1670 1675 1680

Ala Arg Leu Asp Ala Arg Phe Met Ala His Ala Ser Ala Val Phe Glu
1685 1690 1695

Arg Val Lys Ala Leu Leu Ser Glu Arg Leu Thr Ala Pro Val Thr Leu
1700 1705 1710

Gln Val Leu Val Pro Glu Glu Arg Asp Ala Leu Ala Leu Ser Gly Leu
1715 1720 1725

Gly Ser Leu Leu Arg Ser Val Ser Gln Glu Asn Pro Leu Val Arg Gly
1730 1735 1740

Gln Leu Ile Arg Val Gln Gly Ser Val Ser Ala Ser Ala Leu Val Asp
1745 1750 1755 1760

Val Leu Val Lys Ser Ala Arg Ala Gly Asp Val Thr Asp Ser Arg Tyr
1765 1770 1775

His Ala Gly Gln Leu Ser Arg Cys Glu Trp Arg Glu Ala Arg Val Ala
1780 1785 1790

Lys Gly Asp Ala Ser Arg Phe Trp Arg Glu Asp Gly Val Tyr Val Ile
1795 1800 1805

Ser Gly Gly Thr Gly Ala Leu Ala Arg Leu Phe Val Ala Glu Ile Gly
1810 1815 1820

Lys Arg Ala Thr Arg Ala Thr Val Ile Leu Val Ala Arg Ala Ser Ser
1825 1830 1835 1840

Ala Glu Ala Val Asp Gly Gly Asn Gly Leu Arg Val Arg His Leu Pro
1845 1850 1855

Val Asp Val Thr Gln Pro Asn Asp Val Asn Ala Phe Val Ala Thr Val
1860 1865 1870

Leu Arg Glu His Gly Arg Ile Asp Gly Val Ile His Ala Ala Gly Ile
1875 1880 1885

Arg Arg Asp Asn Tyr Leu Leu Asn Lys Pro Val Ala Glu Met Gln Ala
1890 1895 1900

Val Leu Ala Pro Lys Val Val Gly Leu Val Asn Leu Asp His Ala Thr
1905 1910 1915 1920

~~Residue~~

Arg Glu Leu Pro Leu Asp Phe Phe Val Thr Phe Ser Ser Leu Ala Ala
1925 1930 1935

Phe Gly Asn Ala Gly Gln Ser Asp Tyr Ala Ala Ala Asn Gly Phe Met
1940 1945 1950

Asp Gly Phe Ala Glu Ser Arg Ala Ala Leu Val Asn Ala Gly Gln Arg
1955 1960 1965

Gln Gly Arg Thr Val Ser Ile Arg Trp Pro Leu Trp Glu Asn Gly Gly
1970 1975 1980

Met Gln Leu Asp Ser Arg Ser Arg Glu Val Leu Met Gln Arg Thr Gly
1985 1990 1995 2000

Met Ala Ala Leu Gly Asp Glu Ala Gly Leu Gly Ala Phe Tyr Arg Ala
2005 2010 2015

Leu Glu Leu Gly Ser Pro Gly Val Ala Val Trp Thr Gly Glu Ala Gln
2020 2025 2030

Arg Phe Arg Glu Leu Ser Val Ser Val Ser Pro Ala Pro Pro Pro His
2035 2040 2045

Gln Val Ala Leu Asp Ala Val Val Ser Ile Thr Glu Lys Val Glu Thr
2050 2055 2060

Lys Leu Lys Ala Leu Phe Ser Glu Val Thr Arg Tyr Glu Glu Arg Arg
2065 2070 2075 2080

Ile Asp Ala Arg Gln Pro Met Glu Arg Tyr Gly Ile Asp Ser Ile Ile
2085 2090 2095

Ile Thr Gln Met Asn Gln Ala Leu Glu Gly Pro Tyr Asn Ala Leu Ser
2100 2105 2110

Lys Thr Leu Phe Phe Glu Tyr Arg Thr Leu Ala Glu Val Ser Gly Tyr
2115 2120 2125

Leu Ala Glu His Arg Ala Glu Glu Ser Ala Lys Trp Val Ala Ala Pro
2130 2135 2140

Gly Glu Asn Ser Ser Ser Val Ile Gln Glu Ala Arg Pro Pro Arg Ala
2145 2150 2155 2160

Asp Ala Thr His Arg Ala Pro Arg Ala Asp Glu Pro Ile Ala Val Ile
2165 2170 2175

~~Peptide~~

Gly Met Ser Gly Arg Tyr Pro Gly Ala Glu Asn Leu Thr Glu Phe Trp
2180 2185 2190

Glu Arg Leu Ser Arg Gly Asp Asp Cys Ile Thr Glu Ile Pro Pro Glu
2195 2200 2205

Arg Trp Ser Leu Asp Gly Phe Phe Tyr Pro Asp Lys Lys His Ala Ala
2210 2215 2220

Ala Arg Gly Met Ser Tyr Ser Lys Trp Gly Gly Phe Leu Gly Gly Phe
2225 2230 2235 2240

Ala Asp Phe Asp Pro Leu Phe Phe Asn Ile Ser Pro Arg Glu Ala Thr
2245 2250 2255

Ser Met Asp Pro Gln Glu Arg Leu Phe Leu Gln Ser Cys Trp Glu Val
2260 2265 2270

Leu Glu Asp Ala Gly Tyr Thr Arg Asp Ser Leu Ala Gln Arg Phe Gly
2275 2280 2285

Ser Ala Val Gly Val Phe Ala Gly Ile Thr Lys Thr Gly Tyr Glu Leu
2290 2295 2300

Tyr Gly Ala Glu Leu Glu Gly Arg Asp Ala Ser Val Arg Pro Tyr Thr
2305 2310 2315 2320

Ser Phe Ala Ser Val Ala Asn Arg Val Ser Tyr Leu Leu Asp Leu Lys
2325 2330 2335

Gly Pro Ser Met Pro Val Asp Thr Met Cys Ser Ala Ser Leu Thr Ala
2340 2345 2350

Val His Met Ala Cys Glu Ala Leu Gln Arg Gly Ala Cys Val Met Ala
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Ile Ala Gly Gly Val Asn Leu Tyr Val His Pro Ser Ser Tyr Val Ser
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Leu Ser Gly Gln Gln Met Leu Ser
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<212> DNA

<213> Myxococcus xanthus

~~Revised~~

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~~Resonance~~

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~~Accession~~

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7178

<210> 3

<211> 785

<212> PRT

<213> Myxococcus xanthus

<400> 3

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Gly	Lys	Val	Pro	Asp	Val	Lys	Leu	Gln	Asp	Gln	Asp	Ile	Lys	Val	Pro
			20					25					30		
Leu	Ala	Gln	Gly	Thr	Phe	Thr	Glu	Glu	Lys	Ile	Leu	Pro	Pro	Lys	Leu
		35					40					45			
Ala	Met	His	Gly	Phe	Thr	Leu	Ser	Phe	Glu	Ala	Thr	Gly	Glu	Ala	Ser
	50					55					60				
Ile	Arg	Asn	Phe	Asn	Ser	Leu	Gly	Asp	Val	Asp	Glu	Asn	Gly	Ile	Ile
65					70					75					80
Gly	Glu	Pro	Ser	Pro	Glu	Ser	Ala	Glu	Pro	Gly	Pro	Arg	Pro	Gln	Leu
				85					90					95	
Leu	Leu	Gly	Ser	Asp	Ile	Gly	Trp	Met	Arg	Tyr	Gln	Val	Ser	Ala	Arg
			100					105					110		
Val	Lys	Ala	Ala	Val	Ser	Ala	Ser	Leu	Ser	Phe	Leu	Ala	Ser	Glu	Asn
		115					120					125			
Gln	Thr	Glu	Leu	Ser	Val	Thr	Leu	Ser	Asp	Tyr	Arg	Ala	His	Pro	Leu
	130					135					140				
Gly	Gln	Asn	Met	Arg	Glu	Ala	Val	Arg	Ser	Asp	Leu	Ser	Glu	Leu	Arg
145					150					155					160
Leu	Met	Gln	Ala	Thr	Asp	Leu	Ala	Lys	Leu	Thr	Thr	Gly	Asp	Ala	Val
				165					170					175	
Ala	Trp	His	Val	Arg	Gly	Ala	Leu	His	Thr	Arg	Leu	Glu	Leu	Asn	Trp
			180					185					190		
Ala	Asp	Ile	Phe	Pro	Thr	Asn	Leu	Asn	Arg	Leu	Gly	Phe	Leu	Arg	Gly
	195						200					205			

~~Protein~~

Asn Glu Leu Leu Ala Leu Lys Thr Ser Ala Lys Ala Gly Leu Ser Ala
210 215 220

Arg Val Ser Leu Thr Asp Asp Tyr Gln Leu Ser Phe Ser Arg Pro Arg
225 230 235 240

Ala Gly Arg Ile Gln Val Ala Val Arg Lys Val Lys Ser His Glu Gln
245 250 255

Ala Leu Ser Ala Gly Leu Gly Ile Thr Val Glu Leu Leu Asp Pro Ala
260 265 270

Thr Val Lys Ala Gln Leu Gly Gln Leu Leu Glu Ala Leu Leu Gly Pro
275 280 285

Val Leu Arg Asp Leu Val Lys Lys Gly Thr Thr Ala Val Glu Ile Met
290 295 300

Asp Gly Leu Val Asp Lys Ala Ser Lys Ala Lys Leu Asp Asp Asn Gln
305 310 315 320

Lys Lys Val Leu Gly Leu Val Leu Glu Arg Leu Gly Ile Asp Pro Gln
325 330 335

Leu Ala Asp Pro Ala Asn Leu Pro Gln Ala Trp Ala Asp Phe Lys Ala
340 345 350

Arg Val Ala Glu Ser Leu Glu Asn Ala Val Arg Thr Gln Val Ala Glu
355 360 365

Gly Phe Glu Tyr Glu Tyr Leu Arg Leu Ser Glu Thr Ser Thr Leu Leu
370 375 380

Glu Val Val Val Glu Asp Val Thr Ala Met Arg Phe His Glu Ser Leu
385 390 395 400

Leu Lys Gly Asn Leu Val Glu Leu Leu Lys Trp Met Lys Ser Leu Pro
405 410 415

Ala Gln Gln Ser Glu Phe Glu Leu Arg Asn Tyr Leu His Ala Thr Thr
420 425 430

Leu Thr Arg Gln Gln Ala Ile Gly Phe Ser Leu Gly Leu Gly Ser Phe
435 440 445

Glu Leu Leu Lys Ala Lys Asn Val Ser Lys Gln Ser Trp Val Thr Gln
450 455 460

~~Residue~~

Glu	Asn	Phe	Gln	Gly	Ala	Arg	Arg	Met	Ala	Phe	Leu	Gly	Arg	Arg	Gly	
465					470					475					480	
Tyr	Glu	Asp	Lys	Leu	Leu	Gly	Thr	Arg	Gly	Gln	Trp	Val	Val	Asp	Leu	
				485					490					495		
Lys	Ala	Asp	Met	Thr	Arg	Phe	Ser	Pro	Thr	Pro	Val	Ala	Ser	Asp	Phe	
			500					505					510			
Gly	Tyr	Gly	Leu	His	Leu	Met	Leu	Trp	Gly	Arg	Gln	Lys	Lys	Leu	Ser	
		515					520					525				
Arg	Lys	Asp	Leu	Gln	Gln	Ala	Val	Asp	Asp	Ala	Val	Val	Trp	Gly	Val	
	530					535					540					
Leu	Asp	Ala	Lys	Asp	Ala	Ala	Thr	Val	Ile	Ser	Thr	Met	Gln	Glu	Asp	
545					550					555					560	
Met	Gly	Lys	His	Pro	Ile	Glu	Thr	Arg	Leu	Glu	Leu	Lys	Met	Ala	Asp	
				565					570					575		
Asp	Ser	Phe	Arg	Ala	Leu	Val	Pro	Arg	Ile	Gln	Thr	Leu	Glu	Leu	Ser	
			580					585					590			
Arg	Phe	Ser	Arg	Ala	Leu	Ala	Arg	Ala	Leu	Pro	Trp	Ser	Glu	Gln	Leu	
		595					600					605				
Pro	Arg	Ala	Ser	Ala	Glu	Phe	Arg	Arg	Ala	Val	Tyr	Ala	Pro	Ile	Trp	
	610					615					620					
Glu	Ala	Tyr	Leu	Arg	Glu	Val	Gln	Glu	Gln	Gly	Ser	Leu	Met	Leu	Asn	
625					630					635					640	
Asp	Leu	Ser	Pro	Ser	Arg	Ala	Ala	Gln	Ile	Ala	Lys	Trp	Tyr	Phe	Gln	
				645					650					655		
Lys	Asp	Pro	Thr	Val	Arg	Asp	Leu	Gly	Lys	Asp	Leu	Gln	Leu	Ile	Glu	
			660					665					670			
Ser	Glu	Trp	Arg	Pro	Gly	Gly	Gly	Asn	Phe	Ser	Phe	Ala	Glu	Val	Ile	
		675					680					685				
Ser	Lys	Asn	Pro	Asn	Thr	Leu	Met	Arg	Cys	Arg	Asn	Phe	Val	Ser	Gly	
	690					695					700					
Met	Val	Arg	Leu	Arg	Arg	Ala	Ile	Asp	Glu	Arg	Lys	Ala	Pro	Asp	Glu	
705					710					715					720	

~~Residue~~

Leu Arg Thr Val Phe Gly Glu Leu Glu Gly Met Trp Thr Thr Gly Phe
725 730 735

His Leu Arg Ala Ala Gly Ser Leu Leu Ser Asp Leu Ala Gln Ser Thr
740 745 750

Pro Leu Gly Leu Ala Gly Val Glu Arg Thr Leu Thr Val Arg Val Ala
755 760 765

Asp Ser Glu Glu Gln Leu Val Phe Ser Thr Ala Arg Ser Thr Gly Ala
770 775 780

Ala
785

<210> 4

<211> 529

<212> PRT

<213> Myxococcus xanthus

<400> 4

Met Pro Ser Gly Cys Tyr Gly Ala Ala Ser Ala Phe Val Leu Pro Pro
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Leu Pro Ala Met Pro Gln Ala Pro Ser Asp Val Ser Gln Val Leu Leu
20 25 30

Pro Phe Gly Gly Leu Val Gly Arg Glu Val Asp Leu Asp Ala Phe Leu
35 40 45

Gln Thr Leu Met Asp Arg Ile Ala Ile Thr Leu Gln Ala Asp Arg Gly
50 55 60

Thr Leu Trp Leu Leu Asp Pro Ala Arg Arg Glu Leu Phe Ser Arg Ala
65 70 75 80

Ala His Leu Pro Glu Val Ser Gln Ile Arg Val Lys Leu Gly Gln Gly
85 90 95

Val Ala Gly Thr Val Ala Lys Ala Gly His Ala Ile Asn Val Pro Asp
100 105 110

Pro Arg Gly Glu Gln Arg Phe Phe Ala Asp Ile Asp Arg Met Thr Gly
115 120 125

Tyr Arg Thr Thr Ser Leu Leu Ala Val Pro Leu Arg Asp Gly Asp Gly

~~Residues~~

130						135						140			
Ala	Leu	Tyr	Gly	Val	Leu	Gln	Val	Leu	Asn	Arg	Arg	Gly	Glu	Asp	Arg
145					150					155					160
Phe	Thr	Asp	Glu	Asp	Thr	Gln	Arg	Leu	Thr	Ala	Ile	Ala	Ser	Gln	Val
				165					170					175	
Ser	Thr	Ala	Leu	Gln	Ser	Thr	Ser	Leu	Tyr	Gln	Glu	Leu	Gln	Arg	Ala
			180					185					190		
Lys	Glu	Gln	Pro	Gln	Val	Pro	Val	Gly	Tyr	Phe	Phe	Asn	Arg	Ile	Ile
		195					200					205			
Gly	Glu	Ser	Pro	Gln	Leu	Gln	Ala	Ile	Tyr	Arg	Leu	Val	Arg	Lys	Ala
	210					215					220				
Ala	Pro	Thr	Asp	Ala	Thr	Val	Leu	Leu	Arg	Gly	Glu	Ser	Gly	Ser	Gly
225					230					235					240
Lys	Glu	Leu	Phe	Ala	Arg	Ala	Val	His	Val	Asn	Gly	Pro	Arg	Arg	Asp
				245					250					255	
Gln	Pro	Phe	Ile	Lys	Val	Asp	Cys	Ala	Ala	Leu	Pro	Ala	Thr	Leu	Ile
			260					265					270		
Glu	Asn	Glu	Leu	Phe	Gly	His	Glu	Arg	Gly	Ala	Phe	Thr	Gly	Ala	Asp
		275					280					285			
His	Arg	Val	Pro	Gly	Lys	Phe	Glu	Ala	Ala	Ser	Gly	Gly	Thr	Val	Phe
	290					295					300				
Ile	Asp	Glu	Ile	Gly	Glu	Leu	Pro	Leu	Pro	Val	Gln	Gly	Lys	Leu	Leu
305					310					315					320
Arg	Val	Ile	Gln	Asp	Arg	Glu	Phe	Glu	Arg	Val	Gly	Gly	Thr	Gln	Ala
				325					330					335	
Val	Lys	Val	Asp	Val	Arg	Ile	Val	Ala	Ala	Thr	His	Arg	Asp	Leu	Ala
			340					345					350		
Arg	Met	Val	Ala	Glu	Gly	Arg	Phe	Arg	Glu	Asp	Leu	Tyr	Tyr	Arg	Ile
		355					360					365			
Lys	Val	Val	Glu	Val	Val	Leu	Pro	Pro	Leu	Arg	Glu	Arg	Gly	Ala	Glu
	370					375					380				
Asp	Ile	Glu	Arg	Leu	Ala	Arg	His	Phe	Val	Ala	Ala	Val	Ala	Arg	Arg

385					390					395					400		
His	Arg	Leu	Thr	Pro	Pro	Arg	Leu	Ser	Ala	Ala	Ala	Val	Glu	Arg	Leu		
				405					410					415			
Lys	Arg	Tyr	Arg	Trp	Pro	Gly	Asn	Val	Arg	Glu	Leu	Glu	Asn	Cys	Ile		
			420					425					430				
Glu	Ser	Ala	Val	Val	Leu	Cys	Glu	Gly	Glu	Ile	Leu	Glu	Glu	His	Leu		
		435					440					445					
Pro	Leu	Pro	Asp	Val	Asp	Arg	Ala	Ala	Leu	Pro	Pro	Pro	Ala	Ala	Ala		
	450					455					460						
Gln	Gly	Val	Asn	Ala	Pro	Thr	Ala	Pro	Ala	Pro	Leu	Asp	Ala	Gly	Leu		
465					470					475					480		
Leu	Pro	Leu	Ala	Glu	Val	Glu	Arg	Arg	His	Ile	Leu	Arg	Val	Leu	Asp		
				485					490					495			
Ala	Val	Lys	Gly	Asn	Arg	Thr	Ala	Ala	Ala	Arg	Val	Leu	Ala	Ile	Gly		
			500					505					510				
Arg	Asn	Thr	Leu	Ala	Arg	Lys	Leu	Lys	Glu	Tyr	Gly	Leu	Gly	Asp	Glu		
		515					520					525					

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<210> 5
<211> 292
<212> PRT
<213> Myxococcus xanthus
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Page 21

~~Residue~~

Met	Met	Arg	Glu	Gly	Ala	Pro	Gln	Glu	Ala	Thr	Leu	Phe	Phe	Ser	His
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Leu	His	Trp	Asp	His	Val	Gln	Gly	Phe	Pro	Phe	Phe	Thr	Pro	Ala	Trp
				85					90					95	
Leu	Pro	Thr	Ser	Glu	Leu	Thr	Leu	Tyr	Gly	Pro	Gly	Ala	Asn	Gly	Ala
			100					105					110		
Gln	Ala	Leu	Gln	Ser	Glu	Leu	Ala	Ala	Gln	Met	Gln	Pro	Leu	His	Phe
	115						120					125			
Pro	Val	Pro	Leu	Ser	Thr	Met	Arg	Ser	Arg	Met	Asp	Phe	Arg	Ser	Ala
	130					135					140				
Leu	His	Ala	Arg	Pro	Val	Glu	Val	Gly	Pro	Phe	Arg	Val	Thr	Pro	Ile
145					150					155					160
Asp	Val	Pro	His	Pro	Gln	Gly	Cys	Leu	Ala	Tyr	Arg	Leu	Glu	Ala	Asp
				165					170					175	
Gly	His	Ser	Phe	Val	Tyr	Ala	Thr	Asp	Val	Glu	Val	Arg	Val	Gln	Glu
			180					185					190		
Leu	Ala	Pro	Glu	Val	Gly	Arg	Leu	Phe	Glu	Gly	Ala	Asp	Val	Leu	Cys
	195						200					205			
Leu	Asp	Ala	Gln	Tyr	Thr	Pro	Asp	Glu	Tyr	Glu	Gly	Arg	Lys	Gly	Val
	210					215					220				
Ala	Lys	Lys	Gly	Trp	Gly	His	Ser	Thr	Met	Met	Asp	Ala	Ala	Gly	Val
225					230					235					240
Ala	Gly	Leu	Val	Gly	Ala	Arg	Arg	Leu	Cys	Leu	Phe	His	His	Asp	Pro
				245					250					255	
Ala	His	Gly	Asp	Asp	Met	Leu	Glu	Asp	Met	Ala	Glu	Gln	Ala	Arg	Ala
			260					265					270		
Leu	Phe	Pro	Val	Cys	Glu	Pro	Ala	Arg	Glu	Gly	Gln	Arg	Leu	Val	Leu
		275					280					285			
Gly	Arg	Ala	Ala												
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<210> 6
<211> 168

~~Residue~~

<212> PRT

<213> Myxococcus xanthus

<400> 6

Met	Pro	Gly	Pro	Arg	Cys	Ala	Glu	Asn	Asp	Trp	Val	Ala	Leu	Leu	Val
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Arg	Val	Asn	His	Glu	Lys	Val	Ala	Ala	Ala	Gln	Leu	Gly	Lys	His	Gly
		20						25					30		
Tyr	Glu	Phe	Phe	Leu	Pro	Thr	Tyr	Thr	Pro	Pro	Lys	Ser	Ser	Gly	Val
		35					40					45			
Lys	Ala	Lys	Leu	Pro	Leu	Phe	Pro	Gly	Tyr	Leu	Phe	Cys	Arg	Tyr	Gln
	50					55					60				
Pro	Leu	Asn	Pro	Tyr	Arg	Ile	Val	Arg	Ala	Pro	Gly	Val	Ile	Arg	Leu
65					70					75					80
Leu	Gly	Gly	Asp	Ala	Gly	Pro	Glu	Ala	Val	Pro	Ala	Gln	Glu	Leu	Glu
				85					90					95	
Ala	Ile	Arg	Arg	Val	Ala	Asp	Ser	Gly	Val	Ser	Ser	Asn	Pro	Cys	Asp
			100						105					110	
Tyr	Leu	Arg	Val	Gly	Gln	Arg	Val	Arg	Ile	Ile	Glu	Gly	Pro	Leu	Thr
		115					120					125			
Gly	Leu	Glu	Gly	Ser	Leu	Val	Thr	Ser	Lys	Ser	Gln	Leu	Arg	Phe	Ile
	130					135					140				
Val	Ser	Val	Gly	Leu	Leu	Gln	Arg	Ser	Val	Ser	Val	Glu	Val	Ser	Ala
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Glu	Gln	Leu	Glu	Pro	Ile	Thr	Asp								
				165											

<210> 7

<211> 79

<212> PRT

<213> Myxococcus xanthus

<400> 7

Met	Asp	Lys	Arg	Ile	Ile	Phe	Asp	Ile	Val	Thr	Ser	Ser	Val	Arg	Glu
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Val	Val	Pro	Glu	Leu	Glu	Ser	His	Pro	Phe	Glu	Pro	Glu	Asp	Asp	Leu

~~Rosenberg~~

20

25

30

Val Gly Leu Gly Ala Asn Ser Leu Asp Arg Ala Glu Ile Val Asn Leu
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Thr Leu Glu Lys Leu Ala Leu Asn Ile Pro Arg Val Glu Leu Ile Asp
50 55 60

Ala Lys Thr Ile Gly Gly Leu Val Asp Val Leu His Ala Arg Leu
65 70 75

<210> 8

<211> 420

<212> PRT

<213> Myxococcus xanthus

<400> 8

Met Gly Pro Val Gly Ile Glu Ala Met Asn Ala Tyr Cys Gly Ile Ala
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Arg Phe Ala Asn Leu Leu Met Glu Glu Lys Thr Val Pro Leu Pro Tyr
35 40 45

Glu Asp Pro Val Thr Tyr Gly Val Asn Ala Ala Arg Pro Ile Leu Asp
50 55 60

Gln Leu Thr Ala Ala Glu Arg Asp Ser Ile Glu Leu Leu Val Ala Cys
65 70 75 80

Thr Glu Ser Ser Phe Asp Phe Gly Lys Ala Met Ser Thr Tyr Leu His
85 90 95

Gln His Leu Gly Leu Ser Arg Asn Cys Arg Leu Ile Glu Leu Lys Ser
100 105 110

Ala Cys Tyr Ser Gly Val Ala Gly Leu Gln Met Ala Val Asn Phe Ile
115 120 125

Leu Ser Gly Val Ser Pro Gly Ala Lys Ala Leu Val Val Ala Ser Asp
130 135 140

Leu Ser Arg Phe Ser Ile Ala Glu Gly Gly Asp Ala Ser Thr Glu Asp
145 150 155 160

~~Residue~~

Trp	Ser	Phe	Ala	Glu	Pro	Ser	Ser	Gly	Ala	Gly	Ala	Val	Ala	Met	Leu	165	170	175
Val	Ser	Asp	Thr	Pro	Arg	Val	Phe	Arg	Val	Asp	Val	Gly	Ala	Asn	Gly	180	185	190
Tyr	Tyr	Gly	Tyr	Glu	Val	Met	Asp	Thr	Cys	Arg	Pro	Val	Ala	Asp	Ser	195	200	205
Glu	Ala	Gly	Asp	Ala	Asp	Leu	Ser	Leu	Leu	Ser	Tyr	Leu	Asp	Cys	Cys	210	215	220
Glu	Asn	Ala	Phe	Arg	Glu	Tyr	Thr	Arg	Arg	Val	Pro	Ala	Ala	Asn	Tyr	225	230	235
Ala	Glu	Ser	Phe	Gly	Tyr	Leu	Ala	Phe	His	Thr	Pro	Phe	Gly	Gly	Met	245	250	255
Val	Lys	Gly	Ala	His	Arg	Thr	Met	Met	Arg	Lys	Phe	Ser	Gly	Lys	Asn	260	265	270
Arg	Gly	Asp	Ile	Glu	Ala	Asp	Phe	Gln	Arg	Arg	Val	Ala	Pro	Gly	Leu	275	280	285
Thr	Tyr	Cys	Gln	Arg	Val	Gly	Asn	Ile	Met	Gly	Ala	Thr	Met	Ala	Leu	290	295	300
Ser	Leu	Leu	Gly	Thr	Ile	Asp	His	Gly	Asp	Phe	Ala	Thr	Ala	Lys	Arg	305	310	315
Ile	Gly	Cys	Phe	Ser	Tyr	Gly	Ser	Gly	Cys	Ser	Ser	Glu	Phe	Phe	Ser	325	330	335
Gly	Val	Val	Thr	Glu	Glu	Gly	Gln	Gln	Arg	Gln	Arg	Ala	Leu	Gly	Leu	340	345	350
Gly	Glu	Ala	Leu	Gly	Arg	Arg	Gln	Gln	Leu	Ser	Met	Pro	Asp	Tyr	Asp	355	360	365
Ala	Leu	Leu	Lys	Gly	Asn	Gly	Leu	Val	Arg	Phe	Gly	Thr	Arg	Asn	Ala	370	375	380
Glu	Leu	Asp	Phe	Gly	Val	Val	Gly	Ser	Ile	Arg	Pro	Gly	Gly	Trp	Gly	385	390	395
Arg	Pro	Leu	Leu	Phe	Leu	Ser	Ala	Ile	Arg	Asp	Phe	His	Arg	Asp	Tyr	405	410	415

~~Residues~~

Gln Trp Ile Ser
420

<210> 9

<211> 325

<212> PRT

<213> Myxococcus xanthus

<400> 9

Met	Ser	Ser	Val	Ala	Thr	Ala	Val	Pro	Leu	Thr	Ala	Arg	Asp	Ser	Ala
1				5				10						15	
Val	Ser	Arg	Arg	Leu	Arg	Ile	Thr	Pro	Ser	Met	Cys	Gly	Gln	Thr	Ser
			20					25					30		
Leu	Phe	Ala	Gly	Gln	Ile	Gly	Asp	Trp	Ala	Trp	Asp	Thr	Val	Ser	Arg
		35					40					45			
Leu	Cys	Gly	Thr	Asp	Val	Leu	Thr	Ala	Thr	Asn	Ala	Ser	Gly	Ala	Pro
	50					55					60				
Thr	Tyr	Leu	Ala	Phe	Tyr	Tyr	Phe	Arg	Ile	Arg	Gly	Thr	Pro	Ala	Leu
65					70					75					80
His	Pro	Gly	Ala	Leu	Arg	Phe	Gly	Asp	Thr	Leu	Asp	Val	Thr	Ser	Lys
				85					90					95	
Ala	Tyr	Asn	Phe	Gly	Ser	Glu	Ser	Val	Leu	Thr	Val	His	Arg	Ile	Cys
			100					105					110		
Lys	Thr	Ala	Glu	Gly	Gly	Ala	Pro	Glu	Ala	Asp	Ala	Phe	Gly	His	Glu
		115					120					125			
Glu	Leu	Tyr	Glu	Gln	Pro	Gln	Pro	Gly	Arg	Ile	Tyr	Ala	Glu	Thr	Phe
	130					135					140				
Asn	Arg	Trp	Ile	Thr	Arg	Ser	Asp	Gly	Lys	Ser	Asn	Glu	Ser	Leu	Ile
145					150					155					160
Lys	Ser	Ser	Pro	Val	Gly	Phe	Gln	Tyr	Ala	His	Leu	Pro	Leu	Leu	Pro
				165					170					175	
Asp	Glu	Tyr	Ser	Pro	Arg	Arg	Ala	Tyr	Gly	Asp	Ala	Arg	Ala	Arg	Gly
			180					185					190		
Thr	Phe	His	Asp	Val	Asp	Ser	Ala	Glu	Tyr	Arg	Leu	Thr	Val	Asp	Arg
		195					200					205			

~~Rosenberg~~

Phe Pro Leu Arg Tyr Ala Val Asp Val Ile Arg Asp Val Asn Gly Val
210 215 220

Gly Leu Ile Tyr Phe Ala Ser Tyr Phe Ser Met Val Asp Trp Ala Ile
225 230 235 240

Trp Gln Leu Ala Arg His Gln Gly Arg Ser Glu Gln Ala Phe Leu Ser
245 250 255

Arg Val Val Leu Asp Gln Gln Leu Cys Phe Leu Gly Asn Ala Ala Leu
260 265 270

Asp Thr Thr Phe Asp Ile Asp Val Gln His Trp Glu Arg Val Gly Gly
275 280 285

Gly Glu Glu Leu Phe Asn Val Lys Met Arg Glu Gly Ala Gln Gly Arg
290 295 300

Asp Ile Ala Val Ala Thr Val Lys Val Arg Phe Asp Ala Ala Ser Glu
305 310 315 320

Gly Gly Arg Arg Gly
325

<210> 10

<211> 83

<212> PRT

<213> Myxococcus xanthus

<400> 10

Met Thr Asp Glu Gln Ile Arg Gly Val Val His Gln Ser Ile Val Arg
1 5 10 15

Val Leu Pro Arg Val Arg Ser Asn Glu Ile Ala Gly His Leu Asn Leu
20 25 30

Arg Glu Leu Gly Ala Asp Ser Val Asp Arg Val Glu Ile Leu Thr Ser
35 40 45

Ile Leu Asp Ser Leu Arg Leu Gln Lys Thr Pro Leu Ala Lys Phe Ala
50 55 60

Asp Ile Arg Asn Ile Asp Ala Leu Val Ala Phe Leu Ala Gly Glu Val
65 70 75 80

Ala Gly Gly

~~Residue~~

<210> 11

<211> 374

<212> PRT

<213> Myxococcus xanthus

<400> 11

Met	Met	Gln	Glu	Arg	Gly	Val	Ala	Leu	Pro	Phe	Glu	Asp	Pro	Val	Thr
1				5				10						15	

Asn	Ala	Val	Asn	Ala	Ala	Arg	Pro	Ile	Leu	Asp	Ala	Met	Ser	Pro	Glu
		20						25					30		

Ala	Arg	Glu	Arg	Ile	Glu	Leu	Leu	Val	Thr	Ser	Ser	Glu	Ser	Gly	Val
		35					40					45			

Asp	Phe	Ser	Lys	Ser	Ile	Ser	Ser	Tyr	Ala	His	Glu	His	Leu	Gly	Leu
	50					55					60				

Ser	Arg	His	Cys	Arg	Phe	Leu	Glu	Val	Lys	Gln	Ala	Cys	Tyr	Ala	Ala
65					70					75					80

Thr	Gly	Ala	Leu	Gln	Leu	Ala	Leu	Gly	Tyr	Ile	Ala	Ser	Gly	Val	Ser
				85					90					95	

Pro	Gly	Ala	Lys	Ala	Leu	Val	Ile	Ala	Thr	Asp	Val	Thr	Leu	Val	Asp
			100					105					110		

Glu	Ser	Gly	Leu	Tyr	Ser	Glu	Pro	Ala	Met	Gly	Thr	Gly	Gly	Val	Ala
		115					120					125			

Val	Leu	Leu	Gly	Asp	Glu	Pro	Arg	Val	Met	Lys	Met	Asp	Leu	Gly	Ala
	130					135					140				

Phe	Gly	Asn	Tyr	Ser	Tyr	Asp	Val	Phe	Asp	Thr	Ala	Arg	Pro	Ser	Pro
145					150					155					160

Glu	Ile	Asp	Ile	Gly	Asp	Val	Asp	Arg	Ser	Leu	Phe	Thr	Tyr	Leu	Asp
				165					170					175	

Cys	Leu	Lys	His	Ser	Phe	Ala	Ala	Tyr	Gly	Arg	Arg	Val	Asp	Gly	Val
			180					185					190		

Asp	Phe	Val	Ser	Thr	Phe	Asp	Tyr	Leu	Ala	Met	His	Thr	Pro	Phe	Ala
		195					200					205			

~~Rossmberg~~

Gly Leu Val Lys Ala Gly His Arg Lys Met Met Arg Glu Leu Thr Pro
210 215 220

Cys Asp Val Asp Glu Ile Glu Ala Asp Phe Gly Arg Arg Val Lys Pro
225 230 235 240

Ser Leu Gln Tyr Pro Ser Leu Val Gly Asn Leu Cys Ser Gly Ser Val
245 250 255

Tyr Leu Ser Leu Cys Ser Ile Ile Asp Thr Ile Lys Pro Glu Arg Ser
260 265 270

Ala Arg Val Gly Met Phe Ser Tyr Gly Ser Gly Cys Ser Ser Glu Phe
275 280 285

Phe Ser Gly Val Ile Gly Pro Glu Ser Val Ser Ala Leu Ala Gly Leu
290 295 300

Asp Ile Gly Gly His Leu Arg Gly Arg Arg Gln Leu Thr Phe Asp Gln
305 310 315 320

Tyr Val Glu Leu Leu Lys Glu Asn Leu Arg Cys Leu Val Pro Thr Lys
325 330 335

Asn Arg Asp Val Asp Val Glu Arg Tyr Leu Pro Leu Val Thr Arg Thr
340 345 350

Ala Ser Arg Pro Arg Met Leu Ala Leu Arg Arg Val Val Asp Tyr His
355 360 365

Arg Gln Tyr Glu Trp Val
370

<210> 12
<211> 171
<212> PRT
<213> Myxococcus xanthus

<400> 12
Met Asn Thr Pro Ser Leu Thr Asn Trp Pro Ala Arg Leu Gly Tyr Leu
1 5 10 15

Leu Ala Val Gly Gly Ala Trp Phe Ala Ala Asp Gln Val Thr Lys Gln
20 25 30

Met Ala Arg Asp Gly Ala Lys Arg Pro Val Ala Val Phe Asp Ser Trp
35 40 45

~~Rosenberg~~

Trp His Phe His Tyr Val Glu Asn Arg Ala Gly Ala Phe Gly Leu Phe
50 55 60

Ser Ser Phe Gly Glu Glu Trp Arg Met Pro Phe Phe Tyr Val Val Gly
65 70 75 80

Ala Ile Cys Ile Val Leu Leu Ile Gly Tyr Tyr Phe Tyr Thr Pro Pro
85 90 95

Thr Met Lys Leu Gln Arg Trp Ser Leu Ala Thr Met Ile Gly Gly Ala
100 105 110

Leu Gly Asn Tyr Val Asp Arg Val Arg Leu Arg Tyr Val Val Asp Phe
115 120 125

Val Ser Trp His Val Gly Asp Arg Phe Tyr Trp Pro Ser Phe Asn Ile
130 135 140

Ala Asp Thr Ala Val Val Val Gly Ala Ala Leu Met Ile Leu Glu Ser
145 150 155 160

Phe Arg Glu Pro Arg Gln Gln Leu Ser Pro Gly
165 170

<210> 13

<211> 475

<212> PRT

<213> Myxococcus xanthus

<400> 13

Met Gly Thr Ser Glu Pro Val Glu Pro Asp His Ala Leu Ser Lys Pro
1 5 10 15

Pro Pro Val Ala Pro Val Gly Ala Gln Ala Leu Pro Arg Gly Pro Ala
20 25 30

Met Pro Gly Ile Ala Gln Leu Met Met Leu Phe Leu Arg Pro Thr Glu
35 40 45

Phe Leu Asp Arg Cys Ala Ala Arg Tyr Gly Asp Thr Phe Thr Leu Lys
50 55 60

Ile Pro Gly Thr Pro Pro Phe Ile Gln Thr Ser Asp Pro Ala Leu Ile
65 70 75 80

Glu Val Ile Phe Lys Gly Asp Pro Asp Leu Phe Leu Gly Gly Lys Ala

~~Residue~~

85								90				95			
Asn	Asn	Gly	Leu	Lys	Pro	Val	Val	Gly	Glu	Asn	Ser	Leu	Leu	Val	Leu
			100					105					110		
Asp	Gly	Lys	Arg	His	Arg	Arg	Asp	Arg	Lys	Leu	Ile	Met	Pro	Thr	Phe
		115					120					125			
Leu	Gly	Glu	Arg	Met	His	Ala	Tyr	Gly	Ser	Val	Ile	Arg	Asp	Ile	Val
	130					135					140				
Asn	Ala	Ala	Leu	Asp	Arg	Trp	Pro	Val	Gly	Lys	Pro	Phe	Ala	Val	His
145					150					155					160
Glu	Glu	Thr	Gln	Gln	Ile	Met	Leu	Glu	Val	Ile	Leu	Arg	Val	Ile	Phe
				165					170					175	
Gly	Leu	Glu	Asp	Ala	Arg	Thr	Ile	Ala	Gln	Phe	Arg	His	His	Val	His
			180					185					190		
Gln	Val	Leu	Lys	Leu	Ala	Leu	Phe	Leu	Phe	Pro	Asn	Gly	Glu	Gly	Lys
		195					200					205			
Pro	Ala	Ala	Glu	Gly	Phe	Ala	Arg	Ala	Val	Gly	Lys	Ala	Phe	Pro	Ser
	210					215					220				
Leu	Asp	Val	Phe	Ala	Ser	Leu	Lys	Ala	Ile	Asp	Asp	Ile	Ile	Tyr	Gln
225					230					235					240
Glu	Ile	Gln	Asp	Arg	Arg	Ser	Gln	Asp	Ile	Ser	Gly	Arg	Gln	Asp	Val
				245				250						255	
Leu	Ser	Leu	Met	Met	Gln	Ser	His	Tyr	Asp	Asp	Gly	Ser	Val	Met	Thr
			260					265					270		
Pro	Gln	Glu	Leu	Arg	Asp	Glu	Leu	Met	Thr	Leu	Leu	Met	Ala	Gly	His
		275					280					285			
Glu	Thr	Ser	Ala	Thr	Ile	Ala	Ala	Trp	Cys	Val	Tyr	His	Leu	Cys	Arg
	290					295					300				
His	Pro	Asp	Ala	Met	Gly	Lys	Leu	Arg	Glu	Glu	Ile	Ala	Ala	His	Thr
305					310					315					320
Val	Asp	Gly	Val	Leu	Pro	Leu	Ala	Lys	Ile	Asn	Glu	Leu	Lys	Phe	Leu
				325					330					335	
Asp	Ala	Val	Val	Lys	Glu	Thr	Met	Arg	Ile	Thr	Pro	Val	Phe	Ser	Leu

~~Repeating~~

340					345					350					
Val	Ala	Arg	Val	Leu	Lys	Glu	Pro	Gln	Thr	Ile	Gly	Gly	Thr	Thr	Tyr
	355						360					365			
Pro	Ala	Asn	Val	Val	Leu	Ser	Pro	Asn	Ile	Tyr	Gly	Thr	His	His	Arg
	370					375					380				
Ala	Asp	Leu	Trp	Gly	Asp	Pro	Lys	Val	Phe	Arg	Pro	Glu	Arg	Phe	Leu
385					390					395					400
Glu	Glu	Arg	Val	Asn	Pro	Phe	His	Tyr	Phe	Pro	Phe	Gly	Gly	Gly	Ile
				405					410					415	
Arg	Lys	Cys	Ile	Gly	Thr	Ser	Phe	Ala	Tyr	Tyr	Glu	Met	Lys	Ile	Phe
			420					425					430		
Val	Ser	Glu	Thr	Val	Arg	Arg	Met	Arg	Phe	Asp	Thr	Arg	Pro	Gly	Tyr
		435					440					445			
His	Ala	Lys	Val	Val	Arg	Arg	Ser	Asn	Thr	Leu	Ala	Pro	Ser	Gln	Gly
	450					455					460				
Val	Pro	Ile	Ile	Val	Glu	Ser	Arg	Leu	Pro	Ser					
465					470					475					

<210> 14

<211> 318

<212> PRT

<213> Myxococcus xanthus

<400> 14

Met	Val	Asp	Ser	Val	Ser	Lys	Gln	Ala	Arg	Arg	Lys	Val	Phe	Leu	Phe
1				5					10					15	
Ser	Gly	Gln	Gly	Thr	Gln	Ser	Tyr	Phe	Met	Ala	Lys	Glu	Leu	Phe	Asp
		20						25					30		
Thr	Gln	Thr	Gly	Phe	Lys	Arg	Gln	Leu	Leu	Glu	Leu	Asp	Glu	Gln	Phe
		35					40					45			
Lys	Gln	Arg	Leu	Gly	His	Ser	Ile	Leu	Glu	Arg	Ile	Tyr	Asp	Ala	Arg
	50					55					60				
Ala	Ala	Arg	Leu	Asp	Pro	Leu	Asp	Asp	Val	Leu	Val	Ser	Phe	Pro	Ala
65					70					75					80

~~Residues~~

Ile Phe Met Ile Glu His Ala Leu Ala Arg Leu Leu Ile Asp Arg Gly
85 90 95

Ile Gln Pro Asp Ala Val Val Gly Ala Ser Met Gly Glu Val Ala Ala
100 105 110

Ala Ala Ile Ala Gly Ala Ile Ser Val Asp Ala Ala Val Ala Leu Val
115 120 125

Ala Ala Gln Ala Gln Leu Phe Ala Arg Thr Ala Pro Arg Gly Gly Met
130 135 140

Leu Ala Val Leu His Glu Leu Glu Ala Cys Arg Gly Phe Thr Ser Val
145 150 155 160

Ala Arg Asp Gly Glu Val Ala Ala Ile Asn Tyr Pro Ser Asn Phe Val
165 170 175

Leu Ala Ala Asp Glu Ala Gly Leu Gly Arg Ile Gln Gln Glu Leu Ser
180 185 190

Gln Arg Ser Val Ala Phe His Arg Leu Pro Val Arg Tyr Pro Phe His
195 200 205

Ser Ser His Leu Asp Pro Leu Arg Glu Glu Tyr Arg Ser Arg Val Arg
210 215 220

Ala Asp Ser Leu Thr Trp Pro Arg Ile Pro Met Tyr Ser Cys Thr Thr
225 230 235 240

Ala Asn Arg Val His Asp Leu Arg Ser Asp His Phe Trp Asn Val Val
245 250 255

Arg Ala Pro Ile Gln Leu Tyr Asp Thr Val Leu Gln Leu Glu Gly Gln
260 265 270

Gly Gly Cys Asp Phe Ile Asp Val Gly Pro Ala Ala Ser Phe Ala Thr
275 280 285

Ile Ile Lys Arg Ile Leu Ala Arg Asp Ser Thr Ser Arg Leu Phe Pro
290 295 300

Leu Leu Ser Pro Ser Pro Ala Ser Thr Gly Ser Ser Met Gly
305 310 315

<210> 15
<211> 330

~~Revised~~

<212> PRT

<213> Myxococcus xanthus

<400> 15

Met	Thr	Glu	Ala	Pro	Ala	Pro	Arg	Ala	Pro	Ala	Gln	Val	Pro	Pro	Pro	
1				5					10					15		
Pro	Ser	Ser	Pro	Trp	Ala	Leu	His	Thr	Arg	Gly	Ala	Ala	Ser	Ala	Pro	
			20					25					30			
Val	Asn	Ala	Arg	Lys	Ala	Ala	Leu	Phe	Pro	Gly	Gln	Gly	Ser	Gln	Glu	
		35					40					45				
Arg	Gly	Met	Gly	Ala	Ala	Leu	Phe	Asp	Glu	Phe	Pro	Asp	Leu	Thr	Asp	
	50					55						60				
Ile	Ala	Asp	Ala	Ile	Leu	Gly	Tyr	Ser	Ile	Lys	Arg	Leu	Cys	Leu	Glu	
65					70					75					80	
Asp	Pro	Gly	Lys	Glu	Leu	Ala	Gln	Thr	Gln	Phe	Thr	Gln	Pro	Ala	Leu	
				85					90						95	
Tyr	Val	Val	Asn	Ala	Leu	Ser	Tyr	Leu	Lys	Arg	Leu	Arg	Glu	Gly	Ala	
			100					105						110		
Glu	Gln	Pro	Ala	Phe	Val	Ala	Gly	His	Ser	Leu	Gly	Glu	Tyr	Asn	Ala	
		115					120					125				
Leu	Leu	Val	Ala	Gly	Ala	Phe	Asp	Phe	Glu	Thr	Gly	Leu	Arg	Leu	Val	
	130					135					140					
Lys	Arg	Arg	Gly	Glu	Leu	Met	Ser	Gly	Ala	Ser	Gly	Gly	Thr	Met	Ala	
145					150					155					160	
Ala	Val	Val	Gly	Cys	Asp	Ala	Val	Ala	Val	Glu	Gln	Val	Leu	Arg	Asp	
				165					170					175		
Arg	Gln	Leu	Thr	Ser	Leu	Asp	Ile	Ala	Asn	Ile	Asn	Ser	Pro	Asp	Gln	
			180					185						190		
Ile	Val	Val	Ser	Gly	Pro	Ala	Gln	Asp	Ile	Glu	Arg	Ala	Arg	Gln	Cys	
		195					200					205				
Phe	Val	Asp	Arg	Gly	Ala	Arg	Tyr	Val	Pro	Leu	Asn	Val	Arg	Ala	Pro	
	210					215					220					
Phe	His	Ser	Arg	Tyr	Met	Gln	Pro	Ala	Ala	Ser	Glu	Phe	Glu	Arg	Phe	
225					230					235					240	

~~Rosenby~~

Leu Ser Gln Phe Gln Tyr Ala Pro Leu Arg Cys Val Val Ile Ser Asn
245 250 255
Val Thr Gly Arg Pro Tyr Ala His Asp Asn Val Val Gln Gly Leu Ala
260 265 270
Leu Gln Leu Arg Ser Pro Val Gln Trp Thr Ala Thr Val Arg Tyr Leu
275 280 285
Leu Glu Gln Gly Val Glu Asp Phe Glu Glu Leu Gly Pro Gly Arg Val
290 295 300
Leu Thr Arg Leu Ile Thr Ala Asn Lys Arg Gly Ala Pro Ala Pro Ala
305 310 315 320
Thr Ala Ala Pro Ala Lys Trp Ala Asn Ala
325 330

<210> 16
<211> 417
<212> PRT
<213> Myxococcus xanthus

<400> 16

Met Ser Thr Ser Pro Val Gln Glu Leu Val Val Ser Gly Phe Gly Val
1 5 10 15
Thr Ser Ala Ile Gly Gln Gly Ala Ala Ser Phe Thr Ser Ala Leu Leu
20 25 30
Glu Gly Ala Ala Arg Phe Arg Val Met Glu Arg Pro Gly Arg Gln His
35 40 45
Gln Ala Asn Gly Gln Thr Thr Ala His Leu Gly Ala Glu Ile Ala Ser
50 55 60
Leu Ala Val Pro Glu Gly Val Thr Pro Gln Leu Trp Arg Ser Ala Thr
65 70 75 80
Phe Ser Gly Gln Ala Ala Leu Val Thr Val His Glu Ala Trp Asn Ala
85 90 95
Ala Arg Leu Gln Ala Val Pro Gly His Arg Ile Gly Leu Val Val Gly
100 105 110
Gly Thr Asn Val Gln Gln Arg Asp Leu Val Leu Met Gln Asp Ala Tyr

~~December~~

115					120					125					
Arg	Glu	Arg	Val	Pro	Phe	Leu	Arg	Ala	Ala	Tyr	Gly	Ser	Thr	Phe	Met
	130					135					140				
Asp	Thr	Asp	Leu	Val	Gly	Leu	Cys	Thr	Gln	Gln	Phe	Ala	Ile	His	Gly
145					150					155					160
Met	Ser	Phe	Thr	Val	Gly	Gly	Ala	Ser	Ala	Ser	Gly	Leu	Leu	Ala	Val
				165					170					175	
Ile	Gln	Ala	Ala	Glu	Ala	Val	Leu	Ser	Arg	Lys	Val	Asp	Val	Cys	Ile
			180					185					190		
Ala	Val	Gly	Ala	Leu	Met	Asp	Val	Ser	Tyr	Trp	Glu	Cys	Gln	Gly	Leu
		195					200					205			
Arg	Ala	Met	Gly	Ala	Met	Gly	Thr	Asp	Arg	Phe	Ala	Arg	Glu	Pro	Glu
	210					215					220				
Arg	Ala	Cys	Arg	Pro	Phe	Asp	Arg	Glu	Ser	Asp	Gly	Phe	Ile	Phe	Gly
225					230					235					240
Glu	Ala	Cys	Gly	Ala	Val	Val	Val	Glu	Ser	Ala	Glu	His	Ala	Arg	Arg
				245					250					255	
Arg	Gly	Val	Thr	Pro	Arg	Gly	Ile	Leu	Ser	Gly	Trp	Ala	Met	Gln	Leu
			260					265					270		
Asp	Ala	Ser	Arg	Gly	Pro	Leu	Ser	Ser	Ile	Glu	Arg	Glu	Ser	Gln	Val
		275					280					285			
Ile	Gly	Ala	Ala	Leu	Arg	His	Ala	Asp	Leu	Ala	Pro	Glu	Arg	Val	Asp
	290					295					300				
Tyr	Val	Asn	Pro	His	Gly	Ser	Gly	Ser	Arg	Gln	Gly	Asp	Ala	Ile	Glu
305					310					315					320
Leu	Gly	Ala	Leu	Lys	Ala	Cys	Gly	Leu	Thr	His	Ala	Arg	Val	Asn	Thr
				325					330					335	
Thr	Lys	Ser	Ile	Thr	Gly	His	Gly	Leu	Ser	Ser	Ala	Gly	Ala	Val	Gly
			340					345					350		
Leu	Ile	Ala	Thr	Leu	Val	Gln	Leu	Glu	Gln	Gly	Arg	Leu	His	Pro	Ser
		355					360					365			
Leu	Asn	Leu	Val	Asp	Pro	Ile	Asp	Ser	Ser	Phe	Arg	Trp	Val	Gly	Ala

~~Residue~~

370		375		380											
Thr	Ala	Glu	Ala	Gln	Ser	Leu	Gln	Asn	Ala	Leu	Val	Leu	Ala	Tyr	Gly
385					390					395					400
Phe	Gly	Gly	Ile	Asn	Thr	Ala	Val	Ala	Val	Arg	Arg	Ser	Ala	Thr	Glu
				405					410					415	

Ser

<210> 17
<211> 262
<212> PRT
<213> Myxococcus xanthus

<400> 17

Met	Gln	Ala	Ala	Ser	Pro	Pro	His	Arg	Asp	Tyr	Gln	Thr	Leu	Arg	Val
1				5					10					15	
Arg	Phe	Glu	Ala	Gln	Thr	Cys	Phe	Leu	Gln	Leu	His	Arg	Pro	Asp	Ala
			20					25					30		
Asp	Asn	Thr	Ile	Ser	Arg	Thr	Leu	Ile	Asp	Glu	Cys	Gln	Gln	Val	Leu
		35					40					45			
Thr	Leu	Cys	Glu	Glu	His	Ala	Thr	Thr	Val	Val	Leu	Glu	Gly	Leu	Pro
	50					55					60				
His	Val	Phe	Cys	Met	Gly	Ala	Asp	Phe	Arg	Ala	Ile	His	Asp	Arg	Val
65					70					75					80
Asp	Asp	Gly	Arg	Arg	Glu	Gln	Gly	Asn	Ala	Glu	Gln	Leu	Tyr	Arg	Leu
				85					90					95	
Trp	Leu	Gln	Leu	Ala	Thr	Gly	Pro	Tyr	Val	Thr	Val	Ala	His	Val	Gln
			100					105					110		
Gly	Lys	Ala	Asn	Ala	Gly	Gly	Leu	Gly	Phe	Val	Ser	Ala	Cys	Asp	Ile
		115					120					125			
Val	Leu	Ala	Lys	Ala	Glu	Val	Gln	Phe	Ser	Leu	Ser	Glu	Leu	Leu	Phe
	130					135					140				
Gly	Leu	Phe	Pro	Ala	Cys	Val	Met	Pro	Phe	Leu	Ala	Arg	Arg	Ile	Gly
145					150					155					160

~~Rescoring~~

Ile Gln Arg Ala His Tyr Leu Thr Leu Met Thr Arg Pro Ile Asp Ala
165 170 175

Ala Gln Ala Leu Ser Trp Gly Leu Ala Asp Ala Val Asp Ala Asp Ser
180 185 190

Glu Lys Leu Leu Arg Leu His Leu Arg Arg Leu Arg Cys Leu Ser Lys
195 200 205

Pro Ala Val Thr Gln Tyr Lys Lys Tyr Ala Ser Glu Leu Gly Gly Gln
210 215 220

Leu Leu Ala Ala Met Pro Arg Ala Ile Ser Ala Asn Glu Ala Met Phe
225 230 235 240

Ser Asp Arg Ala Thr Leu Glu Ala Ile His Arg Tyr Val Glu Thr Gly
245 250 255

Arg Leu Pro Trp Glu Ser
260

<210> 18
<211> 256
<212> PRT
<213> Myxococcus xanthus

<400> 18

Met Gly Ile Met Thr Glu Gly Thr Pro Met Ala Pro Val Val Thr Leu
1 5 10 15

His Glu Val Glu Glu Gly Val Ala Gln Ile Thr Leu Val Asp Arg Glu
20 25 30

Asn Lys Asn Met Phe Ser Glu Gln Leu Val Arg Glu Leu Ile Thr Val
35 40 45

Phe Gly Lys Val Asn Gly Asn Glu Arg Tyr Arg Ala Val Val Leu Thr
50 55 60

Gly Tyr Asp Thr Tyr Phe Ala Leu Gly Gly Thr Lys Ala Gly Leu Leu
65 70 75 80

Ser Ile Cys Asp Gly Ile Gly Ser Phe Asn Val Thr Asn Phe Tyr Ser
85 90 95

Leu Ala Leu Glu Cys Asp Ile Pro Val Ile Ser Ala Met Gln Gly His
100 105 110

~~Residue~~

Gly Val Gly Gly Gly Phe Ala Met Gly Leu Phe Ala Asp Phe Val Val
115 120 125

Leu Ser Arg Glu Ser Val Tyr Thr Thr Asn Phe Met Arg Tyr Gly Phe
130 135 140

Thr Pro Gly Met Gly Ala Thr Tyr Ile Val Pro Lys Arg Leu Gly Tyr
145 150 155 160

Ser Leu Gly His Glu Leu Leu Leu Asn Ala Arg Asn Tyr Arg Gly Ala
165 170 175

Asp Leu Glu Lys Arg Gly Val Pro Phe Pro Val Leu Pro Arg Lys Glu
180 185 190

Val Leu Pro His Ala Tyr Glu Ile Ala Arg Asp Leu Ala Ala Lys Pro
195 200 205

Arg Leu Ser Leu Val Thr Leu Lys Arg His Leu Val Arg Asp Ile Arg
210 215 220

Arg Glu Leu Pro Asp Val Ile Glu Arg Glu Leu Glu Met His Gly Ile
225 230 235 240

Thr Phe His His Asp Asp Val Arg Arg Arg Ile Glu Gln Leu Phe Leu
245 250 255

<210> 19
<211> 424
<212> PRT
<213> Myxococcus xanthus

<400> 19
Met Leu Asn Leu Ile Asn Asn His Ala His Gly Tyr Val Val Thr Pro
1 5 10 15

Val Val Leu Ala Cys Asn Asp Ala Gly Leu Phe Glu Leu Leu Arg Gln
20 25 30

Gly Pro Lys Asp Phe Asp Arg Leu Ala Glu Ala Leu Arg Ala Asn Arg
35 40 45

Gly His Leu Arg Val Ala Met Arg Met Phe Glu Ser Leu Gly Trp Val

~~Residue~~

50						55						60			
Arg 65	Arg	Asp	Ala	Asp	Asp	Val	Tyr	Ala	Val	Thr	Ala	Ala	Ala	Ala	Ala 80
His	Arg	Ser	Phe	Pro	Arg	Glu	Ala	Gln	Ser	Leu	Phe	Ala	Leu	Pro	Met 95
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